REMARKS

Claims 1, 2, 4-8, and 10-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Shimizu et al., U.S. Patent 6,069,440 (hereinafter "Shimizu"). Applicants respectfully traverse the rejection.

Claim 1 recites "a cerium-doped garnet phosphor having a cerium concentration between about 4 mol% and about 8 mol%." The Examiner states "Shimizu et al. disclose . . . [at] column 12, lines 1-4; a content of 0.003-0.2 Ce[, which] is 0.3-20% mol% Ce."

A. Shimizu does not anticipate the range recited in claim 1

In a previous office action response, Applicants argued that Shimizu does not disclose the range of claim 1 with sufficient specificity to constitute anticipation of claim 1.

The Examiner responds:

> In regard to the applicant's argument that the breadth of cerium concentration range in Shimizu the examiner points to column 24, lines 11-25. Here the cerium concentration is 3%, which the examiner interprets as "about" 4%, which is on the same order of magnitude as the claimed cerium concentration range. Shimizu further discloses that when the cerium concentration falls less than the 0.3% the luminous intensity decreases because of the number of excited emission centers of photoluminescence due to Ce decreases, and when the content is greater than 20%, density quenching occurs. However, when the cerium concentration falls within 0.3-20% a luminous intensity of the light emitting diode is not less than 70% (column 12, line 3-9).

Applicants respectfully submit that according to the Examiner's logic, if Shimizu's teaching of 3% cerium is "about" 4% cerium, it is also "about" 2% cerium. Applicants respectfully submit that the present application specifically teaches that 2% cerium is OUTSIDE the scope of the invention. In particular, Fig. 2 and accompany paragraph 15 specifically teach that 2% cerium **does not provide the benefit of widened excitation spectrum** provided by the range in claim 1. See, for example, paragraph 15 of the present application, which teaches "[t]he excitation spectrum *begins to widen at a* Ce^{3+} *concentration of about 4 mol %*" and widens as the cerium concentration increases.

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Applicants remind the Examiner that MPEP section 2131.03 addresses anticipation of ranges recited in a claim. Specifically, MPEP 2131.03 states "[i]f the claims are directed to a narrow range, the reference teaches a broad range, and there is evidence of unexpected results within the claimed narrow range, depending on the other facts of the case, it may be reasonable to conclude that the narrow range is not disclosed with 'sufficient specificity' to constitute an anticipation of the claims. The unexpected results may also render the claims unobvious."

Since the passages of Shimizu cited by the Examiner do not mention the benefit provided by the claimed range, Shimizu does not disclose the claimed range with sufficient specificity to anticipate claim 1. Claim 1 is therefore allowable over Shimizu.

B. Unexpected results of the claimed range render claim 1 unobvious over Shimizu

In a previous office action response, Applicants argued that Fig. 2 demonstrates the unexpected results of the range claimed in claim 1.

The Examiner responds:

> [1] Furthermore, to establish unexpected results over a claimed range, applicants should compare a sufficient number of tests both inside and outside the claimed range to show the criticality of the claimed range. . . . [2] An affidavit or declaration under 37 CFR 1.132 must compare the claimed subject matter with the closest prior art to be effective to rebut a *prima facie* case of obviousness. . . . [3] A comparison of the claimed invention with the disclosure of each cited reference to determine the number of claim limitations in common with each reference, bearing in mind the relative importance of particular limitations, will usually yield the closest single prior art reference. . . . [4] Where the comparison is not identical with the reference disclosure, deviation therefrom should be explained . . . . and if not explained should be noted and evaluated, and if significant, explanation should be required. [Citations omitted.]

Applicants have numbered the phrases the Examiner has copied from case law cited in the MPEP.

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Regarding item 1, that Applicants should compare a sufficient number of tests both inside and outside the claimed range to show the criticality of the claimed range, Applicants respectfully submit that the present application fully supports the criticality of the claimed range. Specifically, paragraph 15 states "[t]he excitation spectrum begins to widen at a Ce^{3+} concentration of about 4 mol %," which supports the criticality of the low end of the claimed range. Paragraph 15 states "[a]s the Ce^{3+} concentration increases, eventually concentration quenching is observed," which supports the criticality of the high end of the claimed range. Fig. 2 shows the excitation spectra for 2 mol% Ce^{3+} (outside the claimed range) and for 6 mol% Ce^{3+} (inside the claimed range). Fig. 2 also shows that the concentration outside the claimed range does not provide the critical result, i.e. the widened excitation spectrum.

Regarding item 2, MPEP 716.02(a)II teaches that "evidence of unobvious or unexpected advantageous properties, such as superiority in a property the claimed compound shares with the prior art, can rebut prima facie obviousness." The MPEP section then quotes In re Chupp, 816 F.2d 643, 646, 2 USPQ2d 1437, 1439 (Fed. Cir. 1987): "Evidence that a compound is unexpectedly superior in one of a spectrum of common properties . . . can be enough to rebut a prima facie case of obviousness." Finally, the MPEP section concludes "No set number of examples of superiority is required." Applicants respectfully submit that Fig. 2 provides evidence of unobvious or unexpected advantageous properties (i.e. the widened excitation spectrum at 6 mol% Ce^{3+}), as required by the above-quoted MPEP section.

Regarding item 3, Applicants are unsure of the bearing of this citation on the present application. The evidence offered in Fig. 2 and accompanying text are relevant to the range disclosed by Shimizu, which the Examiner apparently considers the closest prior art.

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Regarding item 4, that the comparison is not identical with the reference disclosure, Applicants respectfully dispute the implication that the evidence of Fig. 2 is not identical to

the disclosure in Shimizu, since both the 2 mol% concentration and the 6 mol% concentration are within the range disclosed by Shimizu.

In view of the above arguments, Applicants respectfully submit that Shimizu does not anticipate claim 1, since the range claimed in claim 1 is not disclosed with sufficient specificity. Further, Shimizu does not render claim 1 obvious, since Applicants have demonstrated the unexpected results achieved with the claimed range. Applicants respectfully request that the Examiner allow claim 1 over Shimizu. Claims 2, 4-8, and 10-14 depend from claim 1 and are therefore allowable over Shimizu for at least the same reason as claim 1.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu in view of Srivastava et al., WO 00/33390. The Examiner cites WO 00/33390 to teach a second wavelength converting material. As such, WO 00/33390 adds nothing to the deficiencies of Shimizu with respect to claim 1. Claim 9 depends from claim 1 and is therefore allowable over Shimizu and WO 00/33390 for at least the same reason claim 1 is allowable over Shimizu.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu in view of Sonobe, U.S. Patent 6,921,928. The Examiner cites Sonobe to teach a garnet host. As such, Sonobe adds nothing to the deficiencies of Shimizu with respect to claim 1. Claim 3 depends from claim 1 and is therefore allowable over Shimizu and Sonobe for at least the same reason claim 1 is allowable over Shimizu.

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In view of the above arguments, Applicants respectfully request allowance of claims 1-16. Should the Examiner have any questions, the Examiner is invited to call the undersigned at (408) 382-0480.

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Respectfully submitted,

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